Production of Electronic Voting Machine

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Abstract: India is a democratic country in which each person has the right to choose and appoint the representative under whose guidance the nation will functions.Selecting a government is not an easy task and takes efforts by the electoral commission of India. In our project, we are developing an electronic voting machine which is considered as the best medium for voting nowadays. The base of this project depends on the building of EVM using microcontroller chips that make it easy for casting votes.
Keywords: Electronic Voting Machines, Electoral Commission of India, voting methodologies, improvements in voting techniques.

I.   INTRODUCTION

A government is a body in a nation that rules and controls everything in a nation. It is important to select the right representatives and though fair means. Thus, realizing the importance of this on the nation, the electoral commission of India finds it important to conduct proper elections in the nation so as people can take part in this event. The use of electronic voting machines is a method in which the government is able to fulfill this. Before EVM's were a thing there was a system of using Ballot boxes which are temporarily sealed boxes in which votes were cast by writing on the paper and then putting it inside the box. Later, the votes were counted and the results were announced. This method of voting was always criticized because the votes could tamper easily in such a system. The electronic voting machines are systems in which once vote being cast cannot be altered by anyone. This method of casting votes is considered trustworthy and thus used to date. This is a case study involves the analysis of EVM and the methods in which the EVM voting technique can be improved.

II.   HARDWARE DESCRIPTION IN EVM

1) *Microcontroller:* Microcontrollers are the most important part of an embedded system. They are used in the automation of an integral part of the system. In this project, we are using the Atmega16 microcontroller chip which is a 40 pin 8-bit microcontroller developed using CMOS technology and based on AVR architecture. It is a microcontroller with low power consumption and high noise immunity. It is used most commonly due to the presence of registers which makes the connection process easy between CPU and external peripheral devices. The CPU has no direct connection with external devices and performs tasks by reading/writing registers.
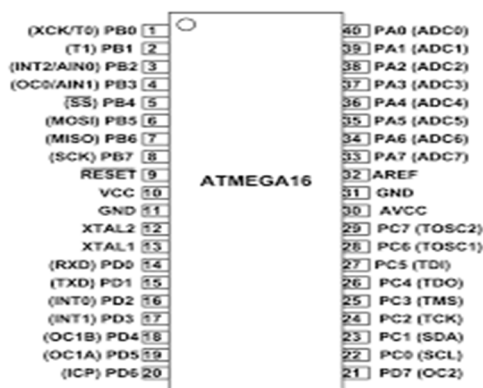

Fig 1.Pin Diagram of Atmega 16 Microprocessor

2) *Liquid Crystal Display:* Liquid Crystal Display also is known as LCD is used to show the result/display the output of the measuring instrument. An LCD panel can display alphabets, numbers, as well as special symbols and, are user-friendly display devices. In this work, we used a 2*16 character LCD display. The LCD display is a thin, flat virtual display using light modulating properties.

3) *Control Switches:* In this work, we used various control switches out of which few were to cast votes, reset the machine and display the final result of the machine by displaying the winning party.

4) *Light Emitting Diodes:* It is a semiconductor device that is used to emit light. These semiconductor devices are used as indicators in many devices. These are low power consuming devices with longer lifetime and faster switching rates.LED's are far better than other light-emitting sources as they are clearly visible from larger distances. Thus they are used in automotive lighting, traffic signal lighting, etc.

III. SOFTWARE DESCRIPTION IN EVM

CODEVISION AVR / CVAVR- AVR belongs to the family of microcontrollers developed by Atmel. These are modified Harvard architecture 8-bit Reduced Instruction Set Computer single-chip microcontroller. In our work, we are using Atmega16 which is a low power CMOS 8 bit microcontroller based on AVR enhanced RISC structure. The programming of this AVR chip is done by CodeVisionAVR. In this AVR programming is done and burnt on the Atmega16 chip for the implementation on the application of any external peripheral devices.
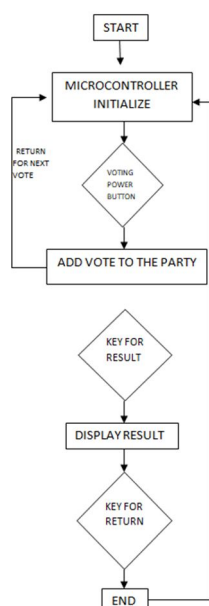

Fig 2.Flowchart explaining working of Electronic Voting Machine
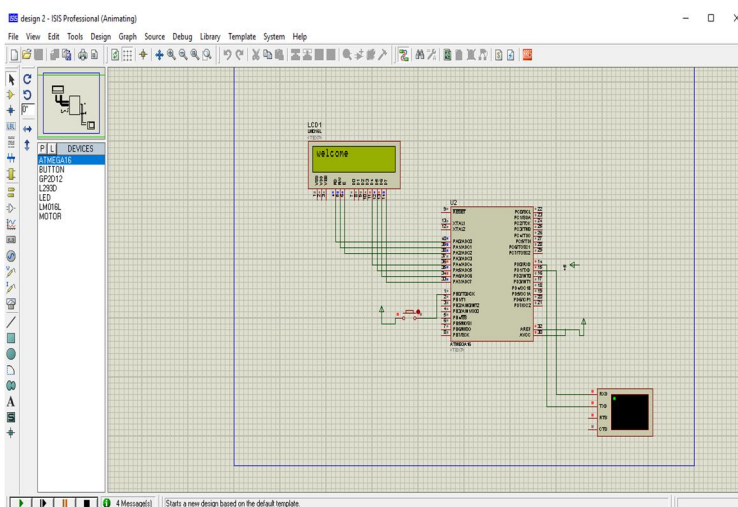
IV. CIRCUIT DIAGRAM

Fig 3.Proteus Simulator Diagram

V.   RESULTS AND DISCUSSIONS

The voting machine designed works as planned and all the components used in the making of EVM are functioning properly. The result after the voting session is properly displayed on the LCD screen. The reset button is also functioning and used to reset the EVM back to start.

VI.   ADVANTAGES AND DISADVANTAGES

A. Advantages
1) It is difficult to hack the machine and tamper the count of votes
2) It is more reliable and versatile.
3) They are cost-effective and economical.
4) Easier to carry and transport to other places
5) One can see all the candidates and parties standing for the elections. Thus, making it easier for the voter to cast their votes.

B. Disadvantages
1) They are vulnerable to malicious programming and can be affected by hackers.
2) A single error/virus in the system can destroy all the data that is stored in the machine.
3) Machines are prone to damage due to humid/rainy weather conditions
4) Most of EVM's in India are not supported with systems which can recognize the voter's identity before casting the vote. This leads to the casting of false votes.

VII.   FUTURE SCOPE

A. PASSWORD ENCRYPTION to be done in the evm machine so that no unauthorize can happen in the evm machine.
B. FINGER PRINT SCANNER to be attached to the evm so that only the head of the department can access the results and can start the process of voting.
C. VV PAT with a Lcd Display to be attached to the evm so that the person who is voting can see if he/she had voted to the party of choice

REFERENCES

[1] S. D. Kraft and Edward T. Wall,‖ Experimental Microprocessor-Based Adaptive Control System‖ IEEE Control Systems Magazine
[2] Alfred C. Weaver, ―A real-time, multi-task programming language for microprocessor-based industrial process control ‖, ACM '78 Proceedings of the 1978 annual conference - Volume 2 Pages 522 – 525
[3] A. Villafiorita and K. Weldemariam, and R. Tiella, "Development, Formal Verification, and Evaluation of an E-Voting System with VVPAT," IEEE Transactions on Information Forensics and Security, vol. 4, no. 4, 2009.
[4] T. Kohno, A. Stubblefield, A. Rubin, and D. Wallach, "Analysis of an Electronic Voting System," in Proc. of IEEE Symp. Security and Privacy, pp. 27-40, 2004. Privacy, pp. 27-40, 2004.
[5] R. Hite, "All Levels of Government are needed to Address Electronic Voting System Challenges," Technical report, GAO, 2007.
[6] R. Mercuri. Voting System Guidelines Comments. [Online]. Available: https:// www.wheresthepaper.org/VVSGComment.pdf, 2005.
[7] Atmel. [Online]. Available: http://www.atmel.com/Images/doc2466.pdf
[8] Diponkar Paul and Sobuj Kumar Ray, " A Preview on Microcontroller Based Electronic Voting Machine," in Proc of IJIEE Symp. Vol.3,No.-2,2013.
[9] Yash Dorzee Lepcha and Deepak Rasailyu and Jigmee Sherpa, " Design of Electronic Voting Machine using Microcontroller," in Proc of IJETT Symp. Vol.32, No.-5,2016.

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